



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
ASSISTANT SECRETARY AND COMMISSIONER OF  
PATENTS AND TRADEMARKS  
Washington, D.C. 20231

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Paper No. 17

Serial Number: 07/174,957

Filing Date: 12/28/93

Appellant(s): Shiro Kamiyama, Masanori Kosugi, Masahiro Kurata,  
Sadao Shiraishi, Michio Kobayashi

MAILED

1 SEP 20 1996

GROUP 1100

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed  
June 3, 1996.

**(1) Real Party in Interest**

A statement identifying the real party in interest is  
contained in the brief.

**(2) Related Appeals and Interferences**

A statement identifying the related appeals and  
interferences which will directly affect or be directly affected  
by or have a bearing on the decision in the pending appeal is  
contained in the brief.

**(3) Status of Claims**

Art Unit: 1102

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1, 7-15 and 17.

Claims 1, 10 and 17 were amended subsequent to the final rejection.

Claims 2-6 and 16 were withdrawn from consideration as not directed to the elected species.

Claims 18-28 have been cancelled.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 1 and 7-15 as a first group and claim 17 as a second group do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *ClaimsAppealed***

Art Unit: 1102

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) Prior Art of Record**

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

F. A. Lowenheim, *Electroplating*, 1978

**(10) New Prior Art**

New references <sup>have</sup> <sub>been</sub> applied in a new ground of rejection in this examiner's answer and is(are) listed below:

5,055,257            Chakrabarti et al            10/1991

**(11) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 7-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Lowenheim.

The admitted prior art is found on pages 1-4 of appellant's specification under the heading "Description of Related Art". The admitted prior art is taken to show that it is known to carry out superplastic forming of aluminum articles (page 1, lines 16-19) although these articles were not considered to be feasible for uses that require beauty, adhesion of coatings and anticorrosion. Reasons for this are given as shortcomings in known processes for treating the surface of the aluminum

articles. It is noted that "in general, it can be contemplated that adhesion of coatings and anticorrosion can be improved by mechanically removing surface layers through, e.g., air blast . . . " but that this method "tends to cause warpage and strain, and, because of the abrasive that may be buried in the surfaces, may cause blackening, poor adhesion of coatings and so forth after further surface treatment such as coating." See page 2, lines 4-12. Appellant continues that "[i]t can also be contemplated to use the known means as disclosed in the following publications." One of these publications is Japanese Patent Laid-open No. 1-212775. This publication discloses etching an aluminum article in an aqueous acidic solution of pH 2 or less followed by etching in an aqueous alkaline solution of pH 13 or more. Appellant observes that "[t]his method has the problem that it requires two-stage treatment" and notes that "because of occurrence of smuts, difficulties such as defective coatings may be caused in the subsequent coating and chemical conversion."

Appellant's claimed invention differs from the teaching of the admitted prior art by reciting the use of a chelating agent in an alkaline solution used for etching aluminum and by specifying that the coating treatment after etching can be hydration oxidation treatment, coating type chromating, anodizing, alternating current electrolysis in an aqueous alkali solution, and/or coating.

Art Unit: 1102

The Lowenheim text discloses methods for cleaning and coating workpieces. At page 75, Lowenheim teaches that alkaline cleaners may be used. At page 76, Lowenheim states that "[c]helating agents have become important in compounding of cleaners, especially with the demand for formulations containing little or no phosphate" and explains that "[t]he most widely used chelating agents in metal cleaners are sodium gluconate, sodium citrate, trisodium nitrilotriacetate (NTA), tetrasodium ethylenediamine tetraacetate (EDTA), and triethanolamine. These compounds can soften water and tie up many metal ions. Lowenheim specifically recognizes that these chelating agents may be used in etchants for aluminum. At page 90, Lowenheim recognizes that cleaning and conditioning pretreatments are necessary for aluminum as for all metals before plating.

Lowenheim further teaches that hydration oxidation treatment of aluminum, i.e. treating aluminum in distilled or deionized boiling water, is well-known. It is particularly useful as a sealing treatment after anodizing to enhance the resistance of the anodic coating to staining or corrosion. See pages 463-464.

The references of record are indicative of the level of skill of one of ordinary skill in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a chelating agent in an alkaline etchant used to etch a high-temperature processed

Art Unit: 1102

aluminum article and to have chosen anodizing and/or hydration oxidation treatment as the subsequent coating treatment in the process suggested by admitted prior art, particularly Japanese document 1-212775, because Lowenheim teaches that chelating agents such as EDTA and triethanolamine are advantageously used in etchants for aluminum and that anodizing and hydration oxidation are known to improve corrosion resistance. While the etching process of Japanese document 1-212775 is a two-step process using a preliminary acidic treatment before etching in an alkaline solution, appellant's claims are written in open form using the term "comprising" and may include steps other than those positively recited.

***(12) New Ground of Rejection***

This examiner's answer contains the following NEW GROUND OF REJECTION.

Claims 1, 7-15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chakrabarti et al (5,055,257) in view of the admitted prior art and Lowenheim.

At page 5 of the Brief, appellant urges that the admitted prior art does not teach or suggest the heating and etching steps of the inventive process. Chakrabarti is now being cited to unambiguously teach that the heating step recited by applicant is known.

Chakrabarti discloses that aluminum alloys capable of superplastic forming are known. See the abstract. Superplastic forming is used to form complex shapes and, in the case of aluminum alloys, may be carried out at temperatures above 700°F (371°C), typically in the range of about 900° to 1000°F. See column 1, lines 20-30. The alloy may contain Mg in an amount up to 10% or 20%. A preferred embodiment contains 3% to 5% Mg. See column 3, lines 19-30. Thus, Chakrabarti shows that it is known to heat an aluminum alloy containing Mg at a high temperature of 200°C or above as recited in instant claims 1 and 17.

The process claimed by appellant differs from that of Chakrabarti by reciting etching a high-temperature processed aluminum alloy article with an aqueous solution containing a chelating agent and having a pH of 7 or higher and then carrying out hydration oxidation treatment, coating type chromating, anodizing, alternating current electrolysis in an aqueous alkali solution, and/or coating.

The admitted prior art is taken as above to show that it is known to etch and subsequently treat aluminum articles. Lowenheim is taken as above to show that chelating agents have become important in compounding of cleaners, that cleaning and conditioning pretreatments of aluminum are necessary as for all metals, and that anodizing and hydration oxidation are beneficial surface treatments for aluminum.

Art Unit: 1102

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilized a chelating agent in an alkaline etchant used to etch a high-temperature processed aluminum article such as that of Chakrabarti and to have chosen anodizing and/or hydration oxidation treatment as a subsequent coating treatment because the admitted prior art shows that it is known to etch and subsequently treat aluminum articles and Lowenheim teaches that chelating agents such as EDTA and triethanolamine are advantageously used in etchants for aluminum which, like other metals, should be pretreated and that anodizing and hydration oxidation are known to improve corrosion resistance.

***(13) Response to argument***

At page 5 of the Brief, appellant urges that the admitted prior art extends from page 1, line 15 to page 4, line 9 of the specification. As shown above, the admitted prior art relied on in the rejection as found in this portion of the specification.

Appellant argues at page 6 of the Brief that since the claimed invention does not employ electrolytic treatment (i.e. anodizing) prior to hydration oxidation, a person skilled in the art would not be motivated to use the sealing step as a postanodizing treatment. This argument is not convincing. As noted in the statement of the rejection above, instant claim 1 is written using the term "comprising" and is open to the inclusion

Art Unit: 1102

of steps not positively recited. Claim 1 encompasses processes in which both anodizing and hydration oxidation are carried out. Claim 17 recites "at least one surface treatment selected from the group consisting of hydration oxidation treatment . . . anodizing . . .". Thus, claim 17 explicitly recites anodizing and clearly may include both anodizing and hydration oxidation treatment. Appellant argues that claim 17 does not require an anodizing step that is followed by hydration oxidation. While this is correct, the scope of claim 17 includes such processes. Additionally, it is noted that claim 17 does not require hydration oxidation. Claim 17 recites that the surface treatment may be "coating". Japanese document 1-212775 teaches coating subsequent to etching.

Appellant argues that the claimed invention is non-obvious in view of the unexpected results achieved by employing a chelating agent in the aqueous solution in the etching step and suggests that Table 1 on page 18 of the specification shows that etching without a chelating agent produces surfaces having unacceptable corrosion, strength and appearance. This argument is not convincing because it does not accurately reflect the data presented in Table 1. The upper section of Table 1 shows results obtained in example 1 when etching was carried out with a solution containing EDTA. The lower section of Table 1 shows the results obtained in comparative example 1. At page 17 of the

Art Unit: 1102

specification, it is stated that comparative example 1 was example 1 repeated except that the etching using the aqueous solution containing the chelating agent was not carried out. Thus, in comparative example 1, no etching was performed. Table 1 clearly indicates that there was no etching at all. Thus, the data in the table do not demonstrate that unexpected results are obtained from the inclusion of a chelating agent. Additionally, it is well-settled that a showing must be commensurate in scope with the claimed subject matter. Claim 1 does not include limitations as to the particular chelating agents or process parameters used in carrying out example 1.

***(14) Period of Response to New Ground of Rejection***

In view of the new ground of rejection, appellant is given a period of TWO MONTHS from the mailing date of this examiner's answer within which to file a reply to such new ground of rejection. The reply may include any amendment or material appropriate to the new ground of rejection. Prosecution otherwise remains closed. Failure to respond to the new ground of rejection will result in dismissal of the appeal of the claims so rejected.

Serial Number: 08/174,957

-11-

Art Unit: 1102

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

WL

William Leader:rg  
August 20, 1996  
September 12, 1996

KATHRYN GORGOS  
PRIMARY EXAMINER  
GROUP 1100

James W. Peterson  
Burns, Doane, Swecker & Mathis  
Geo. Mason BLDG., Wash. & Prince STS.  
Alexandria, VA 22313-1404

Kathryn Gorgos  
Supervisory Patent Examiner  
Technology Center 1700